CLAIMS:

1. A sensor for detecting the turning angle of a rotation shaft and being separated a certain distance away from the shaft, comprising a light source for emitting light beams to a graduated color means mounted on the shaft, and a light reader for reading the reflected light beams back from the graduated color means.

2. The sensor for detecting the turning angle of a rotation shaft as claimed in claim 1, wherein the graduated color means is a longitudinal sheet of film and attached onto the surface of the shaft in its circumference direction thereby rotating with the shaft synchronously.

3. The sensor for detecting the turning angle of a rotation shaft as claimed in claim 2, wherein the graduated color means forms a serial of color points thereon along its longitudinal direction.

4. The sensor for detecting the turning angle of a rotation shaft as claimed in claim 3, wherein the color points are arranged so as to the reflectivity thereof vary according to the requirements of the sensor.

5. The sensor for detecting the turning angle of a rotation shaft as claimed in claim 4, wherein the color points of the graduated means can vary its hues, values, and/or chromas, like from light colors to dark colors in different hues, values and/or chromas.

6. The sensor for detecting the turning angle of a rotation shaft as claimed in all the above claims, wherein the sensor also has a micro-processor for calculating the turning angle of the rotation shaft according to the light intensity changes of the reflected light beams and producing corresponding signals.

7. A detecting device for detecting the turning angle of a rotation

shaft comprising a graduated color means mounted on the shaft and a sensor separated a certain distance away from the shaft for detecting the graduated color means.

8. The detecting device for detecting the turning angle of a rotation shaft as claimed in claim 7, wherein the graduated color means is attached onto the surface of the shaft in its circumference direction thereby rotating with the shaft synchronously.

9. The detecting device for detecting the turning angle of a rotation shaft as claimed in claim 7 or 8, wherein the graduated color means is adhibitted onto the shaft in its circumference direction thereby rotating with the shaft synchronously.

10. The detecting device for detecting the turning angle of a rotation shaft as claimed in claim 8, wherein the graduated color means is a longitudinal sheet of film.

11. The detecting device for detecting the turning angle of a rotation shaft as claimed in claim 10, wherein the graduated color means forms a serial of color points thereon along its longitudinal direction.

12. The detecting device for detecting the turning angle of a rotation shaft as claimed in claim 11, wherein the color points are arranged so as to the reflectivity thereof vary according to the requirements of the sensor.

13. The detecting device for detecting the turning angle of a rotation shaft as claimed in claim 12, wherein the color points of the graduated means can vary its hues, values, and/or chromas, like from light colors to dark colors in different hues, values and/or chromas.

14. The detecting device for detecting the turning angle of a rotation

shaft as claimed in claim 12 or 13, wherein the color points can be consisted of white, grayish, grey, dark grey and black points.

15. The detecting device for detecting the turning angle of a rotation shaft as claimed in claims 7 or 8 or 10 or 11 or 12 or 13, wherein the sensor emits light beams to the graduated color means and receives corresponding reflected light beams.

16. The detecting device for detecting the turning angle of a rotation shaft as claimed in claims 15, wherein the sensor includes a light source and a light reader, among which the light source emits light beams to the graduated color means and the light reader receives corresponding reflected light beams and reads out the light intensity changes of the reflected light beams.

17. The detecting device for detecting the turning angle of a rotation shaft as claimed in claim 16, wherein the sensor also has a micro-processor for calculating the turning angle of the rotation shaft according to the changes of the reflected light beams and producing corresponding signals.

18. A vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off, comprising:

a detecting device including a sensor and a graduated color means mounted on the shaft connected to the steering wheel of the vehicle; and

a turn indicator controlling device electrically connected with the detecting device and control proper turn indicators to turn on or off according to indicating signals from the sensor of the detecting device.

19. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 18, wherein

the sensor is separated a certain distance away from the shaft for detecting the graduated means.

20. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 19, wherein the graduated color means is attached onto the surface of the shaft in its circumference direction thereby rotating with the shaft synchronously.

21. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 20, wherein the graduated color means is a longitudinal sheet of film.

22. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 21, wherein the graduated color means forms a serial of color points thereon along its longitudinal direction.

23. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 22, wherein the color points are arranged so as to the reflectivity thereof vary according to the requirements of the sensor.

24. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 23, wherein the color points of the graduated color means can vary from light colors to dark colors in different hues, values and/or chromas.

25. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 24, wherein the color points can be consisted of white, grayish, grey, dark grey and black points.

26. The vehicular control system for automatically controlling a

vehicle's turn indicators to turn on or off as claimed in claims 18 or 19 or 20, wherein the sensor includes a light source and a light reader, among which the light source emits light beams to the graduated color means and the light reader receives corresponding reflected light beams and reads out the changes of the reflected light beams.

27. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 26, wherein the sensor also has a micro-processor for calculating the turning angle of the rotation shaft according to the changes of the reflected light beams and producing corresponding indicating signals.

28. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 27, wherein the turn indicator controlling device comprises a control unit receiving the indicating signals from the micro-processor of the sensor and thereby controlling corresponding turning indicators to turn on or off automatically.

29. A control system for automatically controlling a vehicle's turn indicators to turn on or off, comprising:

a sensor located a certain distance away from the rotation shaft connected to the steering wheel of the vehicle; and

a graduated color means mounted on the shaft;

wherein the sensor emits light beams to the graduated color means and reads the changes of corresponding reflected light beams thereby producing corresponding indicating signals to automatically control according turn indicators to turn or off.

30. The vehicular control system for automatically controlling a

vehicle's turn indicators to turn on or off as claimed in claim 29, wherein the system further comprises a control unit receiving the indicating signals from the micro-processor of the sensor and thereby controlling corresponding turning indicators to turn on or off automatically.

31. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claims 29 or 30, wherein the sensor includes a light source and a light reader, among which the light source emits light beams to the graduated color means and the light reader receives corresponding reflected light beams and reads out the light intensity changes of the reflected light beams.

32. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 31, wherein the sensor also has a micro-processor for calculating the turning angle of the rotation shaft according to the changes of the reflected light beams and producing the corresponding indicating signals.

33. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 29 or 30 or 31, wherein the graduated color means is attached onto the surface of the shaft in its circumference direction thereby rotating with the shaft synchronously.

34. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 33, wherein the graduated color means is a longitudinal sheet of film.

35. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 34, wherein the graduated color means forms a serial of color points thereon along its

longitudinal direction.

36. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 35, wherein the color points are arranged so as to the reflectivity thereof vary according to the requirements of the sensor.

37. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 36, wherein the color points of the graduated color means can vary from light colors to dark colors in different hues, values and/or chromas.

38. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 37, wherein the color points can vary from white, grayish, grey, dark grey and black points.

39. A sensor for detecting the movement, speed and/or acceleration of an object and being separated a certain distance away from the object, comprising a light source for emitting light beams to a graduated color area on the object, and a light reader for receiving corresponding reflected light beams and reading the changes of the reflected light beams thereby detecting the movement, speed and/or acceleration of the object.

40. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claims 39, wherein the sensor can detect the movement of the object by reading the changes of intensity or the wavelength of the reflected light beams back from the graduated color area.

41. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claim 39 or 40, wherein the

graduated color area is attached onto the surface of the object so as to move synchronously with the object whereby the sensor can detect the movement of the object by reading the changes of the reflected light beams back from the graduated color area.

42. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claim 41, wherein the graduated color area is attached onto the surface of the object for forming a closed loop along its periphery so as to rotate with the object synchronously whereby the sensor can detect the turning angle of the object by reading the changes of the reflected light beams back from the graduated color area.

43. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claims 42, wherein the sensor also has a micro-processor for calculating the turning angle of the object according to the light intensity changes of the reflected light beams.

44. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claims 43, wherein the graduated color area may also form a non-closed loop along the object's periphery.

45. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claim 41, wherein the graduated color means is attached onto the surface of the object so as to move synchronously with the object whereby the sensor can detect the linear movement, speed and/or acceleration of the object by reading the changes of the reflected light beams back from the graduated color area.

46. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claims 45, wherein the sensor also

has a micro-processor for calculating the linear movement distance of the object according to the changes of the reflected light beams.

47. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claim 39 or 40 or 41, wherein the graduated color area is a sheet of film attached onto the surface of the object.

48. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claim 47, wherein the graduated color area forms a serial of color points thereon along its longitudinal direction.

49. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claim 48, wherein the color points are arranged so as to the reflectivity thereof vary according to the requirements of the sensor.

50. The sensor for detecting the movement, speed and/or acceleration of an object as claimed in claim 50, wherein the color points of the graduated area can vary from light colors to dark colors in different hues, values, and/or chromas.

51. A method of detecting the turning angle of a rotation shaft, comprising the steps of:

step 1: create a graduated color means onto the shaft thereby rotating with the shaft synchronously;

step 2: locate a sensor beside the shaft;

step 3: the sensor emits a first light beam to the graduated color means and receives a first reflected light beam;

step 4: the sensor emits a second light beam to the graduated color

means and receives a second reflected light beam; and

step 5: calculating the turning angle of the shaft according to the light intensity changes of the first and second reflected light beams.

52. The method of detecting the turning angle of a rotation shaft as claimed in claim 51, wherein in step 1, the graduated color means is attached onto the surface of the shaft in its circumference direction thereby rotating with the shaft synchronously.

53. The method of detecting the turning angle of a rotation shaft as claimed in claim 52, wherein in step 1, the graduated color means is a longitudinal sheet of film.

54. The method of detecting the turning angle of a rotation shaft as claimed in claim 52, wherein in step 1, the graduated color means forms a serial of color points thereon along its longitudinal direction.

55. The method of detecting the turning angle of a rotation shaft as claimed in claim 53, wherein in step 1, the color points are arranged so as to the reflectivity thereof vary according to the requirements of the sensor.

56. The method of detecting the turning angle of a rotation shaft as claimed in claim 54, wherein in step 1, the color points of the graduated color means can vary from light colors to dark colors.

57. The method of detecting the turning angle of a rotation shaft as claimed in claim 55, wherein in step 1, the color points can be consisted of white, grayish, grey, dark grey and black points in different hues, values, and/or chromas.

58. The method of detecting the turning angle of a rotation shaft as claimed in claim 50, wherein in step 2, the sensor is separated a certain

distance away from the shaft for detecting the graduated color means.

59. The method of detecting the turning angle of a rotation shaft as claimed in claim 57, wherein in step 4, the sensor includes a light source and a light reader, among which the light source emits a light beam to the graduated color means and the light reader receives the corresponding reflected light beam and reads out the changes of the reflected light beam.

60. The method of detecting the turning angle of a rotation shaft as claimed in claim 58, wherein in step 5, the sensor also calculates the turning angle of the rotation shaft according to the changes of the first and second reflected light beams by a micro-processor thereof.

61. A method of detecting the movement, speed or acceleration of an object, comprising the steps of:

step 1: make a graduated color means onto the object whereby the graduated color means including at least three different points with different hues, values and/or chromas between them, and can move with the object synchronously;

step 2: locate a sensor beside the object;

step 3: the sensor emits a first light beam to the graduated color means and receives a first reflected light beam;

step 4: the sensor emits a second light beam to the graduated color means and receives a second reflected light beam; and

step 5: calculating the movement, speed or acceleration of the object according to the light intensity changes of the first and second reflected light beams.

62. The method of detecting the movement, speed or acceleration of an object as claimed in claim 60, wherein in step 1, the graduated color

means is attached onto the surface of the object so as to move synchronously with the object whereby the sensor can detect the movement, speed and/or acceleration of the object by reading the changes of the first and second reflected light beams back from the graduated color means in steps 3 and 4.

63. The method of detecting the movement, speed or acceleration of an object as claimed in claim 61, wherein in step 1, the graduated color means is attached onto the surface of the object for forming a closed loop along its periphery so as to rotate with the object synchronously whereby the sensor can detect the turning angle of the object by reading the changes of the first and second reflected light beams back from the graduated color means in steps 3 and 4.

64. The method of detecting the movement, speed or acceleration of an object as claimed in claims 62, wherein the sensor also has a micro-processor for calculating the turning angle of the object according to the changes of the first and second reflected light beams.

65. The method of detecting the movement, speed or acceleration of an object as claimed in claims 62, wherein The graduated means 2 may also form a non-closed loop along the object's periphery when it permit such an arrangement.

66. The method of detecting the movement, speed or acceleration of an object as claimed in claim 61, wherein in step 1, the graduated color means is attached onto the surface of the object so as to move synchronously with the object whereby the sensor can detect the linear and /or non linear movement of the object by reading the changes of the first and second reflected light beams back from the graduated color

means in steps 3 and 4.

67. The method of detecting the movement, speed or acceleration of an object as claimed in claims 65, wherein the sensor also has a micro-processor for calculating the movement distance, speed and/or acceleration of the object according to the changes of the first and second reflected light beams.

68. The method of detecting the movement, speed or acceleration of an object as claimed in claim 60 or 61, wherein in step 1, the graduated color means is a sheet of film attached onto the surface of the object.

69. The method of detecting the movement, speed or acceleration of an object as claimed in claim 67, wherein in step 1, the graduated color means forms a serial of color points thereon.

70. The method of detecting the movement, speed or acceleration of an object as claimed in claim 68, wherein in step 1, the color points are arranged so as to the reflectivity thereof vary according to the requirements of the sensor.

71. The method of detecting the movement, speed or acceleration of an object as claimed in claim 69, wherein in step 1, the color points of the graduated means can vary from light colors to dark colors in different hues, values and/or chromas.

72. A control system for automatically controlling a vehicle's turn indicators to turn on or off, comprising:

a sensor mounted on the rotation shaft connected to the steering wheel of the vehicle so as to rotate synchronously with the shaft; and

a graduated color means located a certain distance away from the rotation shaft and can receive light beams emitted by the sensor;

wherein the sensor emits light beams to the graduated color means and reads the changes of corresponding reflected light beams thereby producing corresponding indicating signals to automatically control according turn indicators to turn or off.

73. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 72, wherein the sensor also has a micro-processor for calculating the turning angle of the rotation shaft according to the changes of the reflected light beams and producing the corresponding indicating signals.

74. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claims 72 or 73, wherein the sensor includes a light source and a light reader, among which the light source emits light beams to the graduated color means and the light reader receives corresponding reflected light beams and reads out the changes of the reflected light beams.

75. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claims 74, wherein the light reader receives corresponding reflected light beams and reads out the light intensity or wavelength changes of the reflected light beams.

76. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 75, wherein the system further comprises a control unit receiving the indicating signals from the micro-processor of the sensor and thereby controlling corresponding turning indicators to turn on or off automatically.

77. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 77, wherein

the graduated color means is a longitudinal sheet of film.

78. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 77, wherein the graduated color means forms a serial of color points thereon along its longitudinal direction.

79. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 78, wherein the color points are arranged so as to the reflectivity thereof vary according to the requirements of the sensor.

80. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 79, wherein the color points of the graduated color means can vary from light colors to dark colors in different hues, values and/or chromas.

81. The vehicular control system for automatically controlling a vehicle's turn indicators to turn on or off as claimed in claim 80, wherein the color points can vary from white, grayish, grey, dark grey and black points.

82. A robot arm control device for a robot system having a robot arm and a main body to which the robot arm is connected pivotally via a pivotal section, the control device comprising a emitting means and a reflection means, one of them located on a stationary portion of the pivotal section, and the other is mounted on a movable portion of the pivotal section which rotates or moves together with the robot arm synchronously.

83. The robot arm control device for a robot system as claimed in claim 82, wherein the emitting means is a light source potion.

84. The robot arm control device for a robot system as claimed in claim 83, wherein the emitting means including a light reader potion for receiving the reflected light beams from the reflection means.

85. The robot arm control device for a robot system as claimed in claim 84, wherein the reflection means including at least a cambered surface.

86. The robot arm control device for a robot system as claimed in claim 85, wherein the outer surface of the reflection means is arranged thereon with a plurality of blocks.

87. The robot arm control device for a robot system as claimed in claim 86, wherein the surface quality, hues, values and/or chromas of the blocks are pre-arranged different from each other so that the reader reads out the changes of the reflected light beams back from the reflection means after the light source emits light beams to the reflection means since only one of the reflection means and the emitting means is rotates with the robot arm synchronously.

88. The robot arm control device for a robot system as claimed in claim 87, wherein the control device further comprises a micro-processor connected with the light source and reader pair which can produce corresponding indicating signals to control the movement of the robot arm.